

RESIDENTIAL SCENARIO
CARCINOGENS

October 2003

Cancer Risk Formula (with volatilization factor):

$$Cs = [(TR * AT) / (EF * ((SFo * CF * IFSadj) + (SFi * IFAadj * (1/VF + 1/PEF)) + (SFo * CF * RAFd * DFadj)))]$$

BENZENE	
Parameters	Values
Cs (Soil concentration - mg/kg)	0.66
TR (Target cancer risk)	1.E-06
AT (Averaging time - day; EPA, December 1991)	25550
EF (Exposure frequency - day/yr; EPA, December 1991)	350
SFo (Chemical specific oral cancer slope factor - kg-day/mg; IRIS, September 2003)	5.50E-02
CF (Conversion factor - kg/mg; EPA, December 1991)	1.E-06
IFSadj (Age-adjusted soil ingestion rate - mg-yr/kg-day; EPA, August 1997)	114
SFi (Chemical specific inhalation slope factor - kg-day/mg; IRIS, September 2003)	2.70E-02
IFAadj (Age-adjusted inhalation rate - m^3-yr/kg-day; EPAIX, October 2002)	12
VF (Volatilization factor - m^3/kg; EPA, May 1996)	3133
PEF (Particulate emission factor - m^3/kg; EPA, May 1996)	1.10E+09
RAFd (Chemical specific dermal relative absorption factor - unitless; EPAIII, Dec. 1995)	0.05
DFadj (Age-adjusted dermal factor - mg-yr/kg-day; EPA, August 1997)	80

Cancer Risk Formula (without volatilization factor):

$$Cs = [(TR * AT) / (EF * ((SFo * CF * IFSadj) + (SFo * IFAadj * 1/PEF) + (SFo * CF * RAFd * DFadj)))]$$

BENZ(A)ANTHRACENE	
Parameters	Values
Cs (Soil concentration - mg/kg)	0.82
TR (Target cancer risk)	1.E-06
AT (Averaging time - day; EPA, December 1991)	25550
EF (Exposure frequency - day/yr; EPA, December 1991)	350
SFo (Chemical specific oral cancer slope factor - kg-day/mg; EPA, March 1993)	7.30E-01
CF (Conversion factor - kg/mg; EPA, December 1991)	1.E-06
IFSadj (Age-adjusted soil ingestion rate - mg-yr/kg-day; EPA, August 1997)	114
IFAadj (Age-adjusted inhalation rate - m^3-yr/kg-day; EPAIX, October 2002)	12
PEF (Particulate emission factor - m^3/kg; EPA, May 1996)	1.10E+09
RAFd (Chemical specific dermal relative absorption factor - unitless; EPAIII, Dec. 1995)	0.1
DFadj (Age-adjusted dermal factor - mg-yr/kg-day; EPA, August 1997)	80

BENZO(A)PYRENE	
Parameters	Values
Cs (Soil concentration - mg/kg)	0.082
TR (Target cancer risk)	1.E-06
AT (Averaging time - day; EPA, December 1991)	25550
EF (Exposure frequency - day/yr; EPA, December 1991)	350
SF _o (Chemical specific oral cancer slope factor - kg-day/mg; IRIS, September 2003)	7.30E+00
CF (Conversion factor - kg/mg; EPA, December 1991)	1.E-06
IF _{Sadj} (Age-adjusted soil ingestion rate - mg-yr/kg-day; EPA, August 1997)	114
IF _{Aadj} (Age-adjusted inhalation rate - m ³ -yr/kg-day; EPAIX, October 2002)	12
PEF (Particulate emission factor - m ³ /kg; EPA, May 1996)	1.10E+09
RAFd (Chemical specific dermal relative absorption factor - unitless; EPAPII, Dec. 1995)	0.1
DF _{adj} (Age-adjusted dermal factor - mg-yr/kg-day; EPA, August 1997)	80

BENZO(B)FLUORANTHENE	
Parameters	Values
Cs (Soil concentration - mg/kg)	0.82
TR (Target cancer risk)	1.E-06
AT (Averaging time - day; EPA, December 1991)	25550
EF (Exposure frequency - day/yr; EPA, December 1991)	350
SF _o (Chemical specific oral cancer slope factor - kg-day/mg; EPA, March 1993)	7.30E-01
CF (Conversion factor - kg/mg; EPA, December 1991)	1.E-06
IF _{Sadj} (Age-adjusted soil ingestion rate - mg-yr/kg-day; EPA, August 1997)	114
IF _{Aadj} (Age-adjusted inhalation rate - m ³ -yr/kg-day; EPAIX, October 2002)	12
PEF (Particulate emission factor - m ³ /kg; EPA, May 1996)	1.10E+09
RAFd (Chemical specific dermal relative absorption factor - unitless; EPAPII, Dec. 1995)	0.1
DF _{adj} (Age-adjusted dermal factor - mg-yr/kg-day; EPA, August 1997)	80

BENZO(K)FLUORANTHENE	
Parameters	Values
Cs (Soil concentration - mg/kg)	8.2
TR (Target cancer risk)	1.E-06
AT (Averaging time - day; EPA, December 1991)	25550
EF (Exposure frequency - day/yr; EPA, December 1991)	350
SF _o (Chemical specific oral cancer slope factor - kg-day/mg; EPA, March 1993)	7.30E-02
CF (Conversion factor - kg/mg; EPA, December 1991)	1.E-06
IF _{Sadj} (Age-adjusted soil ingestion rate - mg-yr/kg-day; EPA, August 1997)	114
IF _{Aadj} (Age-adjusted inhalation rate - m ³ -yr/kg-day; EPAIX, October 2002)	12
PEF (Particulate emission factor - m ³ /kg; EPA, May 1996)	1.10E+09
RAFd (Chemical specific dermal relative absorption factor - unitless; EPAPII, Dec. 1995)	0.1
DF _{adj} (Age-adjusted dermal factor - mg-yr/kg-day; EPA, August 1997)	80

DIBENZO(A,H)ANTHRACENE	
Parameters	Values
Cs (Soil concentration - mg/kg)	0.082
TR (Target cancer risk)	1.E-06
AT (Averaging time - day; EPA, December 1991)	25550
EF (Exposure frequency - day/yr; EPA, December 1991)	350
SFo (Chemical specific oral cancer slope factor - kg-day/mg; EPA, March 1993)	7.30E+00
CF (Conversion factor - kg/mg; EPA, December 1991)	1.E-06
IFSadj (Age-adjusted soil ingestion rate - mg-yr/kg-day; EPA, August 1997)	114
IFAadj (Age-adjusted inhalation rate - m^3-yr/kg-day; EPAIX, October 2002)	12
PEF (Particulate emission factor - m^3/kg; EPA, May 1996)	1.10E+09
RAFd (Chemical specific dermal relative absorption factor - unitless; EPAIII, Dec. 1995)	0.1
DFadj (Age-adjusted dermal factor - mg-yr/kg-day; EPA, August 1997)	80

CHRYSENE	
Parameters	Values
Cs (Soil concentration - mg/kg)	82
TR (Target cancer risk)	1.E-06
AT (Averaging time - day; EPA, December 1991)	25550
EF (Exposure frequency - day/yr; EPA, December 1991)	350
SFo (Chemical specific oral cancer slope factor - kg-day/mg; EPA, March 1993)	7.30E-03
CF (Conversion factor - kg/mg; EPA, December 1991)	1.E-06
IFSadj (Age-adjusted soil ingestion rate - mg-yr/kg-day; EPA, August 1997)	114
IFAadj (Age-adjusted inhalation rate - m^3-yr/kg-day; EPAIX, October 2002)	12
PEF (Particulate emission factor - m^3/kg; EPA, May 1996)	1.10E+09
RAFd (Chemical specific dermal relative absorption factor - unitless; EPAIII, Dec. 1995)	0.1
DFadj (Age-adjusted dermal factor - mg-yr/kg-day; EPA, August 1997)	80

INDENO(1,2,3-CD)PYRENE	
Parameters	Values
Cs (Soil concentration - mg/kg)	0.82
TR (Target cancer risk)	1.E-06
AT (Averaging time - day; EPA, December 1991)	25550
EF (Exposure frequency - day/yr; EPA, December 1991)	350
SFo (Chemical specific oral cancer slope factor - kg-day/mg; EPA, March 1993)	7.30E-01
CF (Conversion factor - kg/mg; EPA, December 1991)	1.E-06
IFSadj (Age-adjusted soil ingestion rate - mg-yr/kg-day; EPA, August 1997)	114
IFAadj (Age-adjusted inhalation rate - m^3-yr/kg-day; EPAIX, October 2002)	12
PEF (Particulate emission factor - m^3/kg; EPA, May 1996)	1.10E+09
RAFd (Chemical specific dermal relative absorption factor - unitless; EPAIII, Dec. 1995)	0.1
DFadj (Age-adjusted dermal factor - mg-yr/kg-day; EPA, August 1997)	80